

The background features a dark, textured surface with a glowing blue and purple sphere in the center. A white Apple logo is positioned at the top of the sphere. The text "Worldwide Developers Conference" is overlaid on the image. "Worldwide" and "Conference" are in a gold, serif font, while "Developers" is in a white, serif font enclosed in a white rectangular box. The overall aesthetic is futuristic and tech-oriented.

Worldwide

Developers

Conference



# **WebObjects Client-Side Technologies**

*Wiley Hodges*

**Product Marketing Manager,  
Apple Computer, Inc.**

# Overview

---

- **Beyond HTML: An overview of client-side technologies**
- **“Live” clients: the architecture of Java client-side components**
- **Client-side components in the real world: the AISJava Framework**
- **FDF/PDF: Interactive PDF for the Web**
- **Q&A**



# Why Use Client-Side Technologies?

---

- Haven't you ever wanted more?
- HTML/HTTP provides a limited model of interaction
- Standard HTML doesn't provide fine layout control



# Why Not Roll Your Own?

---

- **Circumventing or enhancing HTML requires a lot of work on the programmer's part**
  - Communication with the server
  - Connectivity to existing data and applications



# The WebObjects Solution

---

- **Java Client-Side Components**
- **Interactive FDF/PDF support**



# Java Client-Side Components

---

- **Provides more interactive user interface model**
- **Enables integration with existing Java applets**
- **Uses same back-end logic as for WebObjects HTML interfaces**





# Client Side Components Architecture

*Mike Ferris*

**OpenStep Application  
Frameworks**



# Overview

---

## *Applets can cooperate with the server*

- **The role of applets**
  - Display and manage values for a set of keys
  - Invoke actions in the Web Application
- **WebObjects takes care of the hard stuff**
  - Allows multiple applets to participate
  - Handles communication with the server
  - Synchronizes values with the server



# Keys and Values

---

*Values are property list objects*

- Property lists may be any combination of:
  - String (NSString)
  - Vector (NSArray)
  - Hashtable (NSDictionary)
  - byte[] (NSData)



# Flow of Control (part 1)

## Client

## Server

Page arrives in browser  
Applets initialized  
Initial values set

WOF constructs page  
Initial keys & values in HTML

User uses the applets  
User causes an action

Changed values are gathered  
Action invocation is sent



# Flow of Control (part 2)

## Client

Changed values are gathered  
Action invocation is sent

## Server

WOF updates bound variables  
WOF invokes action

Action executes

Changed values are gathered  
Response is sent

Response is received  
Applets get updated values



# Client Side Architecture

---

## *How does it work?*

- **Applet Group Controller**
  - “Hidden” applet that runs the show
  - Knows about other applets on the page
  - Handles all synchronization of values
  - Handles all communication with server
- **Associations**
  - Know how to deal with specific applets
  - Provide uniform interface to controller



# API

---

## *Writing your own associations or applets*

- **Association API**
  - `public Vector keys()`
  - `public Object valueForKey(String key)`
  - `public void takeValueForKey(Object value, String key)`
- **SimpleAssociation**
  - Can be used if the applet is designed for it
  - Just passes on Association messages



# Uses

---

## *What can I do with it?*

- **Use our applets instead of HTML forms**
  - Can update values without reloading page
- **Write your own applets**
  - For controls that forms don't support
- **Write Associations for existing applets**
  - For integrating other people's applets





# AIS Java Presentation Framework

*Thomas Charukas*

*Director, Java Solutions  
Practice*

*AIS*



# The Problem

---

- **We need to distribute real applications with sophisticated GUIs in a 3-tier fashion**
- **HTML is very limited**
- **Certain functions should be handled on the client:**
  - Data validation, formatting, manipulation, presentation
  - Searching and sorting
  - Feedback



# Java Presentation Framework

---

- **Flexible and rich set of client side Java components for WebObjects based on IFC/JFC**
- **Inter-applet workflow handler**
- **Extensible validation and formatting**
- **Highly configurable from the middle tier**
- **Components talk objects**
  - **WebObjects, CORBA/IIOP and Java Beans**





Demo

# FDF/PDF

---

- **Allows precise layout control of pages using PDF for presentation**
- **Provides a form overlay to PDF documents**
- **Forms can trigger server actions**
- **Forms can receive data from server applications**





Demo

# FDF/PDF Mechanics

**Form 3119**

**First name** \_\_\_\_\_

**Last name** \_\_\_\_\_

**Phone** \_\_\_\_\_

**PDF**



# FDF/PDF Mechanics

**Form 3119**

**First name** \_\_\_\_\_

**Last name** \_\_\_\_\_

**Phone** \_\_\_\_\_

**PDF**



# FDF/PDF Mechanics

**Form 3119**

**First name**

`first`

**Last name**

`last`

**Phone**

`phoneNumber`

`submit ( )`

**FDF/**





# FDF/PDF Mechanics

**Form 3119**

**First name**

`first`

**Last name**

`last`

**Phone**

`phoneNumber`

`submit ( )`

**FDF/PDF**



# Subclass the FDF Component

---

```
public class FormThirtyOneNineteen extends  
PDFComponent {  
    // all the action happens here  
}
```



# Bind Variables to I/O Elements

---

```
public String first =  
pdf.PDFTextField.defaultValueTag;  
  
public String last =  
pdf.PDFTextField.defaultValueTag;  
  
public String phoneNumber =  
pdf.PDFTextField.defaultValueTag;
```



# Bind Actions To Form Controls

---

```
public Component submit() {  
    //do something cool  
    return this;  
}
```



# FDF/PDF Implementation Steps

---

- **Start with PDF file**
- **Create overlay in Adobe Acrobat**
- **FDF file contains both layout and bindings data for components**
  - Replaces HTML/WOD files in WebObjects
- **Create implementation in script or Java**





Q&A

The background of the image is a collage of various items: a magnifying glass with an Apple logo on its handle, a green pen holder with several pens, a globe, and some papers. The text is overlaid on this background.

Worldwide

Developers

Conference